APPENDIX I

GLOSSARY

A

ACCRETION—Growth or increase in size by gradual addition.

AGL—Above ground level. Measurements suffixed by the abbreviation AGL refer to height.

AMBIENT—A representative reading or measurement for a substance under surrounding conditions.

AMDAR—Aircraft meteorological data relay.

ANALOG—Proportional and continuous. An analogue recorder draws continuous lines proportional to the electronic signal input. In an analogue signal, the sound pitch varies proportionately with the intensity of the signal, and the signal is continuous.

ANEMOMETER—A device used to measure wind speed and/or wind direction. From the Greek word anemo, meaning wind, and modern word meter, meaning measurement device.

ANEROID—Without fluid or without water. An aneroid barometer uses no fluid (mercury).

ANOMALOUS—Irregular or abnormal.

APPARENT—The way something appears or is perceived, although it may not be true.

ASCENSION—Rising or increasing in elevation.

ASOS—Automated surface observing system.

AUTODIN—Automatic digital network.

AWN—Automated weather network-the complex worldwide collection and distribution network of meteorological data and NOTAMs operated by the Air Force for the DoD.

AZIMUTH—The horizontal angular measurement from a fixed reference to a point. The Navy uses angular measurements in clockwise degrees from 0 to 360. When 0 is referenced to true north, the result is a true azimuth bearing. When referenced to an arbitrary direction. such as the bow of a ship. the result is a relative azimuth bearing.

B

BACKING—A change in wind direction in a counter-clockwise manner in the Northern Hemisphere, or a clockwise direction in the Souther Hemisphere.

BATHYMETRY—The features and depths underwater.

BATHYTHERMOGRAPH—Any device used to measure and record temperatures through a column of water.

C

CAD—Collective address designator.

CDD—Chemical downwind direction.

CDS—Chemical downwind speed.

CENTIGRAYS—(cGy) A measurement of absorbed radiation equal to 1 rad.

CIC—Combat information center aboard ship.

CLIMATIC—Any element associated with the climate of an area.

CLIMATOLOGY—The study of the statistical means, frequencies, deviations, and trends of weather elements for an area over a period of time.

CODAR—Coded aircraft report.

D

DDN—Defense data network.

DHD—Downwind hazard distance (radiation or chemical).

DIURNAL—Any change that follows a daily pattern. completing one cycle on a daily basis.

DME—Distance measuring equipment, a radio aircraft navigation aid that provides only a distance to a DME transmitter site. Normally used in conjunction with VOR, ILS, or LOC equipment.

DMS—Position given in degrees. minutes, and seconds of latitude and longitude.

DMSP—Defense meteorological satellite program.

DOWNWIND—The direction towards which the wind is blowing; with the wind.

DRIBU—Drifting buoy.

DROPSONDE—A radiosonde instrument dropped by parachute from an aircraft.

DSN—Defense switched network, an upgrade and name change to the automatic voice network (AUTOVON).

DUCT—A layer in the atmosphere that readily traps electromagnetic energy permitting extended transmission ranges.

DUCTING—The process occurring within a duct, also known as trapping.

E

EDD—Effective downwind direction (radioactive fallout).

EDF—Effective downwind forecast.

EDM—Effective downwind message (radioactive fallout).

F

FAA—Federal aviation administration.

FATHOMETER—A device used to measure the depth of the ocean.

FNMOC—Fleet Numerical Meteorology and Oceanography Center, Monterey, California.

FRONT—The interface or transition zone between two air masses of different density. Since temperature is the most important regulator of atmospheric density, a front almost invariably separates air masses of different temperature.

G

GEOPHYSICS—Used to mean working with the physical properties of both the air, land, and water, this term is occasionally used to describe the occupational field of Navy and Marine Corps weather personnel.

GEOPOTENTIAL HEIGHT—The height of a given point in the atmosphere calculated with respect to the energy in the column of air beneath the point, relative to sea level. In other words, an approximation of the height based on measured temperatures, pressures, and humidity content of the supporting air column, and not necessarily an exact measured height.

GFMPL—Geophysics fleet mission program library.

GHz—Gigahertz, (1 billion hertz)

GMT—Greenwich mean time, a term replaced by coordinated universal time (UTC).

GPM—Geopotential meters, also gallons per minute.

GZ—round zero, the detonation point of a weapon, usually nuclear.

H

HDO—Horizontal distance out (when evaluating upper winds); or hurricane duty officer.

HECTOPASCAL (hPa)—A unit of 100 pascals used to measure pressure, exactly equivalent to 1 millibar.

HF—High frequency.

HSA—Half-sector angle.

I

ICAO—Abbreviation for international civil aviation organization.

IFR—Abbreviation for instrument flight rules.

INFRARED (JR)—The portion of the electromagnetic spectrum with wavelengths just slightly longer than visible light energy-thermal energy.

INVERSION—With respect to temperature, an increase in temperature with height. Normally temperature decreases with height in the atmosphere.

IRCS—International radio call sign.

IREPS—Integrated refractive effects prediction system.

ISOTHERMAL—Having an equal temperature throughout.

K

KHz—Kilohertz; 1,000 hertz or cycles per second.

KILOTON—(KT) A multiplication factor for nuclear weapon yields. Each kiloton is equal to the explosive force of 1,000 tons of trinitrotoluene (TNT) explosive.

kn—Alternate abbreviation for knot. In meteorology, the more frequently used abbreviation is "kt", but this should not be confused with the uppercase "KT" meaning kiloton.

L

LAPSE RATE—The decrease of an atmospheric variable with height: the variable being temperature unless otherwise specified.

LCD—Liquid crystal diode. A gray or black display of numbers or shapes commonly used in electronics.

LITTORAL—The coastal zone including the beach to the coastal waters.

LLWS—Low-level wind shear.

M

M-UNITS—A unit of measurement used in electromagnetic refractivity calculations-a modification of N-Units.

MEGATON—(MT) A multiplication factor for nuclear weapon yields. Each megaton is equal to the explosive force of 1 million tons of trinitrotoluene (TNT) explosive.

MET—U.S. Navy mobile environmental team.

METEOROLOGY—The study of phenomenon of the atmosphere.

METVANS—USMC mobile meteorological vans. Highly transportable, completely equipped meteorological facilities constructed as complete modules in cargo containers. Modules may be used independently or connected to form complete, full-spectrum, meteorological support facilities in a forward deployed environment.

MHz—Megahertz, 1 million hertz.

MILS—An angular measurement scale in which 800 mils equals 45 degrees of arc; a circle is 6400 mils.

MMF—U.S. Marine Corps meteorological mobile facility-weather personnel who operate USMC Metvans.

MRS—Mini rawinsonde system.

MSL—Mean sea level, a suffix used after altitude measurements.

MVFR—Marginal visual flight rules.

N

NATO—North Atlantic Treaty Organization.

NAVAID—An acronym for navigation aid, usually referring to an aircraft navigation aid such as an NDB, VOR, TACAN, VORTAC, or DME.

NAVMETOCCOM—Short title for Naval Meteorology and Oceanography Command headquartered at the Stennis Space Center, Mississippi.

NAVSAR—A GFMPL program used to help plan rescue searches at sea.

NBC—An acronym for nuclear, biological, or chemical.

NOAA—National Oceanic and Atmospheric Administration, a division of the U.S. Department of Commerce.

NODDS—Navy oceanographic data distribution system.

NOMOGRAM—Any graphic product used to find solutions to complex calculations without having to perform the calculations.

NOTAM—Notice to airmen.

NTDS—Navy tactical data system.

NUC—An abbreviation for nuclear; used within some NATO messages.

NWS—National weather service, a division of NOAA.

O

OA—Abbreviation for shipboard aviation operations division, the shipboard division for which most Aerographer’s Mates work.

OOD—Officer of the deck

P

PIBAL—An acronym for pilot balloon, a small balloon tracked with a theodolite to determine wind direction and speed.

PIREP—Abbreviation for pilot report.

Q

QFE—A signal used to indicate the value provided; the station pressure.

QFF—A signal used to indicate the value provided; the sea-level pressure.

QNH—A signal used to indicate the value provided; the minimum altimeter setting for the period of time discussed.

R

RABAL—A method using radar to track a balloon carrying a radar-reflector, and is used to determine upper-level winds.

RAD—A unit of measurement of an absorbed dose of radiation equal to 100 ergs of ionization per gram of absorbing material or tissue.

RADFO—An acronym for radiological fallout.

RADIOSONDE—A device carried aloft by a balloon to measure pressure, temperature, and humidity content of the atmosphere.

RAOB—Acronym for radiosonde observation or rawinsonde observation.

RATT—Radio teletype.

RAWINSONDE—Radiosonde-wind sounding. A device carried aloft by balloon that measures pressure, temperature. humidity of the air, and the slant-range from the release point. Calculations on the change in pressure (height) and change in slant-range (distance) yield wind speed and direction.

REFRACTIVITY—The study of how electromagnetic energy is bent (refracted) as it moves through different density layers within the atmosphere.

RH—Usual abbreviation for relative humidity.

RIA—Radiosonde initial analysis, a GFMPL program used to analyze upper-air soundings.

ROCKETSONDE—A device carried aloft by a rocket which measures pressure, temperature. and humidity as it drifts on a parachute to the ground.

ROCOB—Acronym for rocketsonde observation.

S

SALINITY—A measurement of the amount of salts dissolved in sea water.

SAR—Search and rescue.

SMOOS—Shipboard meteorological and oceanographic observing system.

SSI—Showalter stability index.

SURFCAST—(or SURFCST) Acronym for surf forecast.

SUROB—Acronym for surf observation.

SYNOPTIC—In general, pertaining to or affording an overall view. In meteorology, this term has become specialized in referring to the use of meteorological data obtained simultaneously over a wide area for presenting a comprehensive picture of the state of the atmosphere.

T

TACAN—Tactical air navigation, a radio aircraft navigation aid used originally by the military to provide a pilot with direction and distance to a TACAN transmitter.

U

UHF—Ultra-high frequency radio transmission.

UNREP—Underway replenishment.

USW—Undersea Warfare.

UTC—Universal time coordinated (Coordinated Universal Time), usually suffixed with a "Z".

UTM—Universal transverse mercator coordinates, a military coordinate system based on a series of grids used to locate positions between 84°N and 80°S.

V

VALID—Effective, good.

VEERING—A change in the wind direction in a clockwise manner in the Northern Hemisphere, or a counter-clockwise manner in the Southern Hemisphere.

VELOCIMETER—In general, a device used to measure velocity (speed). In oceanography, the sound velocimeter measures the speed of sound in water.

VERTREP—Vertical replenishment by use of helicopters.

VLF—Very-low frequency.

W

WBGT—Wet-bulb globe temperature.

WEATHER—The state of the atmosphere with respect to its effect upon life and human activities.

WMO—World meteorological organization.

X

XBT—Expendable bathythermograph, usually referring to the probe that is dropped in the water and not recovered.

XSV—Expendable sound velocimeter, usually refers to probes that are dropped in the water and not recovered.

APPENDIX II

MARSDEN SQUARE NUMBER

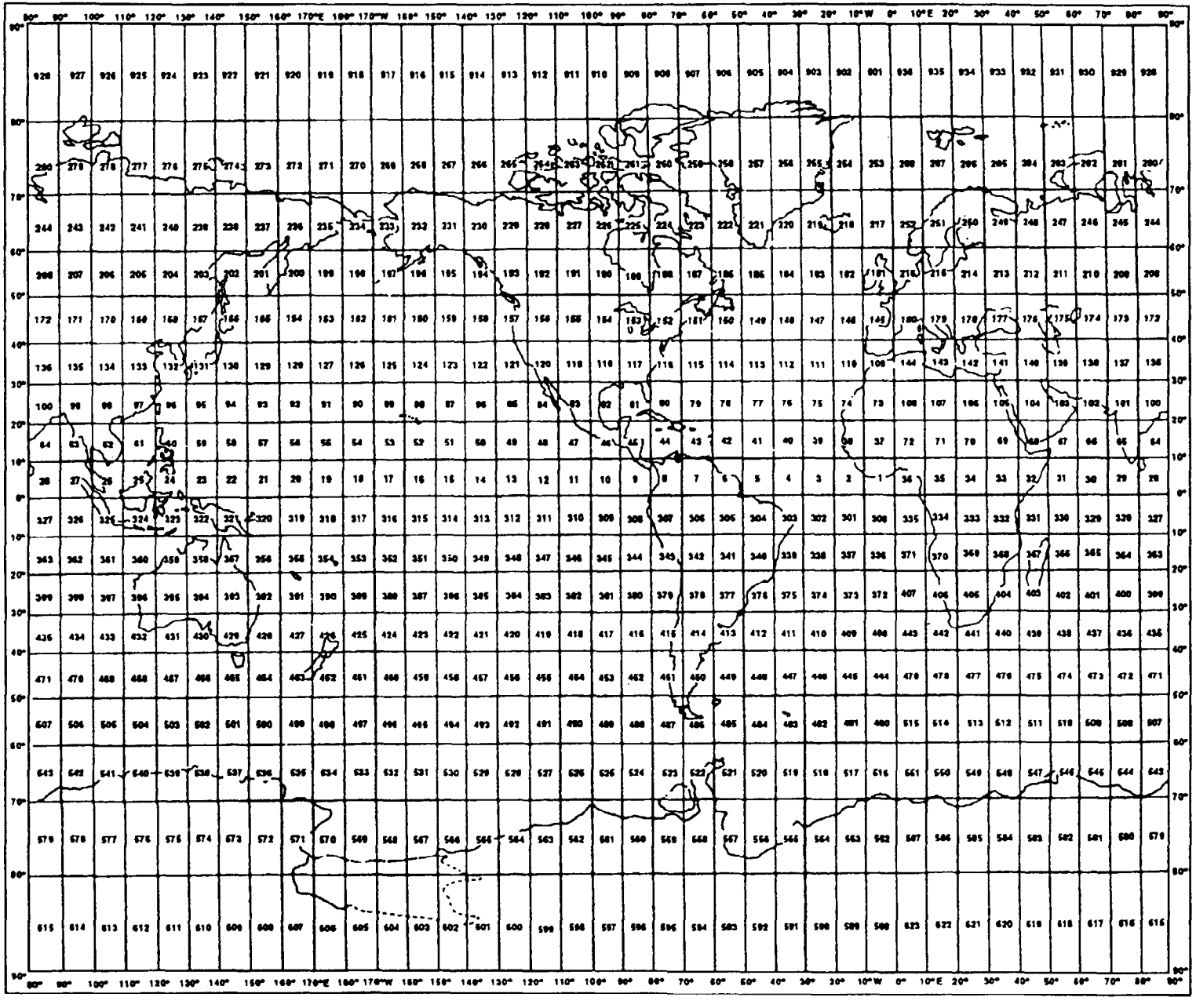

Figure AII-1.—Marsden square number.

APPENDIX III

WMO Code 3333

Q_c = Quadrant of the globe		
Code	Latitude	Longitude
1	North	East
3	South	East
5	South	West
7	North	West

APPENDIX IV

WMO Code 1770

$I_xI_xI_x$= Instrument type for XBT, with fall rate equation coefficients		
Code figure	Instrument	Equation Coefficients a and b
001	Sippican T-4	6.472, -2.16
002	Sippican T-4	6.691, -2.25
011	Sippican T-5	6.828, -1.82
021	Sippican Fast Deep	6.346, -1.82
031	Sippican T-6	6.472, -2.16
032	Sippican T-6	6.691, -2.25
041	Sippican T-7	6.472, -2.16
042	Sippican T-7	6.691, -2.25
051	Sippican Deep Blue	6.472, -2.16
052	Sippican Deep Blue	6.691, -2.25
061	Sippican T-10	6.301, -2.16
071	Sippican T-11	1.779, -0.255
201	TSK T-4	6.472, -2.16
202	TSK T-4	6.691, -2.25
211	TSK T-6	6.472, -2.16
212	TSK T-6	6.691, -2.25
221	TSK T-7	6.472, -2.16
222	TSK T-7	6.691, -2.25
231	TSK T-5	6.828, -1.82
241	TSK T-10	6.301, -2.16
401	Spartan XBT-1	6.301, -2.16
411	Spartan XBT-3	5.861, -0.0904
421	Spartan XBT-4	6.472, -2.16
431	Spartan XBT-5	6.828, -1.82
441	Spartan XBT-5DB	6.828, -1.82
451	Spartan XBT-6	6.472, -2.16
461	Spartan XBT-7	6.472, -2.16
471	Spartan XBT-7DB	6.472, -2.16
481	Spartan XBT-10	6,301, -2.16
491	Spartan XBT-20	6.472, -2.16
501	Spartan XBT-20DB	6.472, -2.16
700	Sippican XCTD standard	
710	Sippican XCTD deep	
720	Sippican AXCTD	
730	Sippican SXCTD	
800	Mechanical BT	
810	Hydrocast	
820	Thermistor chain	
830	CTD	

WMO Code 4770

$X_R X_R$=Recorder type	
Code figure	Recorder
01	Sippican Strip Chart Recorder
02	Sippican MK2A/SSQ-61
03	Sippican MK-9
04	Sippican AN/BHQ-7/MK8
05	Sippican MK-12
10	Spartan SOC BT/SV Processor Model 100
20	Argos XBT-ST
21	CLS-ARGOS/Protecno XBT-ST model 1
22	CLS-ARGOS/Protecno XBT-ST model 2
30	BATHY Systems SA-810
31	Scripps Metrobyte controller
32	Murayama Denki Z-60-16 III
33	Murayama Denki Z-60-16 II
34	Protecno ETSM2
35	Nautilus Marine Service NMS-XBT
40	TSK MK-2A
41	TSk MK-2S
42	TSK MK-30
43	TSK MK-30N
99	Unknown

APPENDIX V

DEGREES TO MILS CONVERSION

AZIMUTH MEASUREMENTS - DEGREES TO MILS							
deg	Mils	deg	Mils	deg	Mils	deg	Mils
0	0	90	1600	180	3200	270	4800
5	89	95	1689	185	3289	275	4889
10	178	100	1778	190	3378	280	4978
15	267	105	1867	195	3467	285	5067
30	356	11O	1956	200	3556	290	5156
25	445	115	2045	205	3645	295	5245
30	533	120	2133	210	3733	300	5333
35	622	125	2222	215	3822	305	5422
40	711	130	2311	220	3911	310	5511
45	800	135	2400	225	4000	315	5600
50	889	140	2489	230	4089	320	5689
55	978	145	2578	235	4178	325	5778
60	1067	150	2667	240	4267	330	5867
65	1156	155	2756	245	4356	335	5956
70	1245	160	2845	250	4445	340	6045
75	1333	165	2933	255	4533	345	6133
80	1422	170	3022	260	4622	350	6222
85	1511	175	3111	265	4711	355	6311
90	1600	180	3200	270	4800	360	6400

APPENDIX VI

REFERENCES USED TO DEVELOP THE TRAMAN

NOTE: Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. When consulting these references, keep in mind that they may have been revised to reflect new technology or revised methods, practices, or procedures. You therefore, need to ensure that you are studying the latest references.

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*Effective 1 October 1996, the Naval Education and Training Program Management Support Activity became the Naval Education and Training Professional Development and Technology Center.

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